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An estimation of technical efficiency in turmeric production in Sri Lanka: A stochastic frontier approach

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Abstract

Despite the abundance of agricultural resources in the country, turmeric is not being fully utilized as an export item. The sector still faces several production deficiencies, primarily due to input-related challenges. Hence, measuring efficiency and identifying the variables affecting inefficiency is critical. For this purpose, a cross-sectional survey of 200 turmeric-producing farmers from six districts in Sri Lanka and DEA (Department of Export Agriculture), namely; Kurunegala, Gampaha, Matale, Kandy, Kaluthara, and Ampara, were undertaken using a multistage random sampling approach. The data relating to inputs and output under turmeric production and farmer characteristics were identified through a structured questionnaire. The data were analyzed using maximum likelihood estimates of the stochastic frontier production function and technical inefficiency model. According to the study, the average technical efficiency of the turmeric sector in the study area was 74%, with a 26% margin for improvement through better use of available resources and technology. The results of the Cobb-Douglas production function and stochastic frontier production function for all the selected districts in Sri Lanka confirmed that the size of the land and the number of seeds were the significant inputs determining turmeric production in Sri Lanka. The results of the inefficiency model have confirmed that family size and experience of farmers significantly negatively impact technical inefficiency, and they are significant at 1% and 5%, respectively. Other characteristics such as age, gender, education, other income, registered in EDA and credit accessibility were insignificant in determining the technical inefficiency of Turmeric production in the country.

Keywords: Famer characteristics, Inefficiency, Stochastic frontier approach, Technical efficiency, Turmeric production

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